

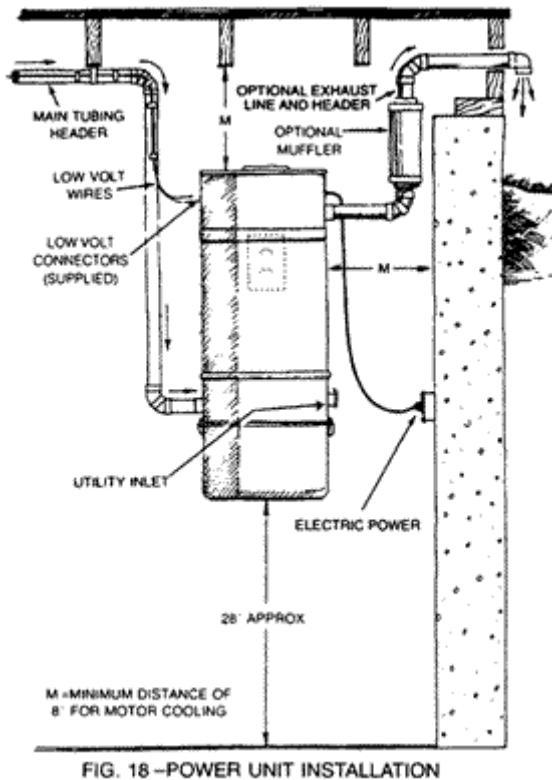
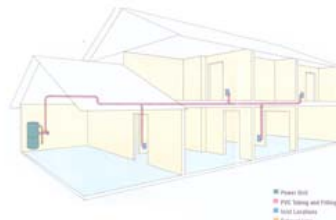
Planning & Installation

Guide to planning and installation of a Scotvac system

A Scotvac built in vacuum system consists of 3 key elements. The power unit, the fixed ducting and the flexible cleaning hose. Correctly planned and installed it will give many years of satisfactory service.

The system can be installed into virtually any property whether under construction or undergoing renovation. It is usually possible to install a system into any existing house without damage to existing decoration, walls and or floors.

- 1. The power unit.** The power unit is ideally located away from the main living areas. This may be an integral garage or basement, alternatively space may be found in the utility room or a cupboard under the stairs.
Installation of power unit. If it is necessary to fit the unit in a cupboard ventilation must be provided. Louvered doors will achieve this.
If the unit is not in the garage provision should be made to vent the exhaust to outside atmosphere. The reason for this is twofold. The exhaust air is hot from passage around the motor and needs to be expelled remotely to avoid overheating the motor. Also the exhaust air contains micro-particles of dust which should be released to atmosphere. If the unit is in a cupboard and exterior exhaust venting is not possible a disposable carbon exhaust filter can be fitted, All Scotvac units include this item as standard.
The exhaust pipe is made using 50mm PVC duct. A vent flap should be provided to stop ingress of debris from outside. As shown a muffler can be fitted in the exhaust run. In addition an intake muffler can be fitted to the top of the power unit. This reduces the higher frequency noise from the air intake of the motor.
At 1 mtr. the un-silenced Scotvac power unit will typically produce noise in the range of 60 decibels. Motor speeds are in the order of 22,000 rpm so a secure fixing for the wall-mounting bracket is required.



The diagram indicates a typical garage/ basement

2. **The fixed ducting.** 50mm dia. PVC ducting is used to connect the power unit to the inlet valves. The ducting is often routed through the loft and down to the inlets. In a new build situation first fix is usually carried out when timber studs and floor joists have been installed but not covered up. Ducting can be built into studded walls before dry-lining is fixed. With solid walls ducting can be routed down inside cupboards and use can be made of voids adjacent to soil pipes which will subsequently be "boxed in". With beam and block floors it sometimes feasible to run ducting under the beams. With suspended timber ground floors use may be made of the void beneath the floor.

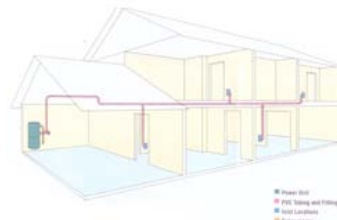
Push fit bends, junctions and fittings are pre-formed in PVC and joints are made using solvent adhesive. To ensure a "clog free" installation junctions between branch lines and the main ducting route are to be from the side or above. This is to avoid creating traps which debris can be caught in.

Behind each inlet valve a special "sharp" 90-degree elbow is fitted. This creates a trap. Any large item that would cause a blockage will be caught by this trap and can be removed from the system via the inlet valve. Every other bend in the ducting is a slow radius bend to ensure a smooth flow back to the dirt collector bin.

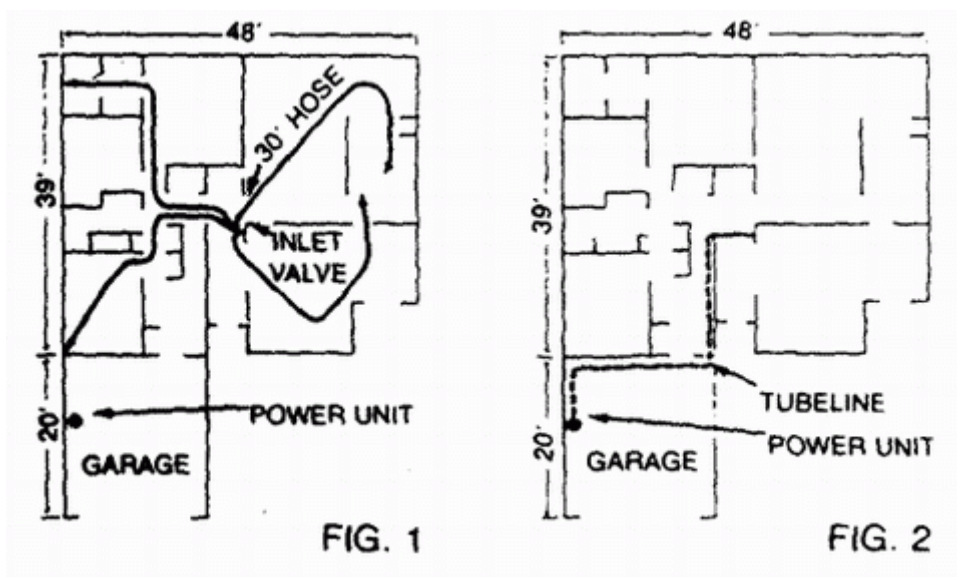
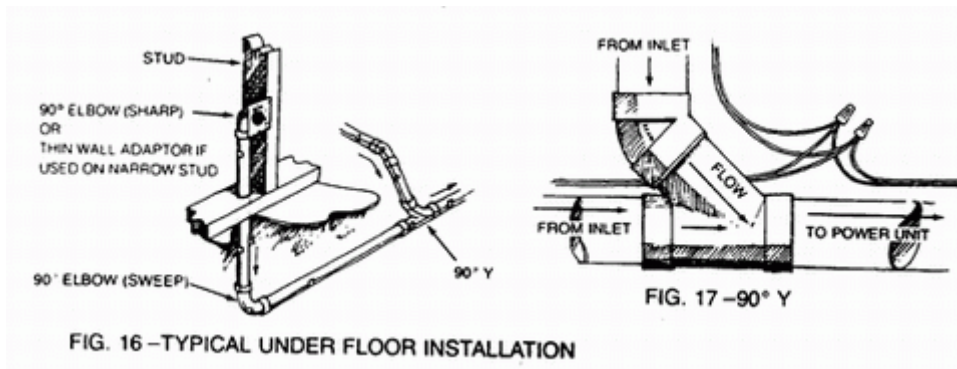
Automatic switching for the power unit avoids the necessity of going to the power unit to switch the power unit on. The power unit is activated when the cleaning hose is inserted into the inlet valve.

Inlet valves are usually fixed to previously installed mounting plates when plastering has been completed. Inlets are approx. 80mm wide by 120mm high and are available in both plastic and metal in a selection of colours. Low voltage wires are connected to terminals at the rear of the inlet prior to installation.

The number and position of the inlet valves is dictated by the length of the cleaning



hose. 10 mtrs. is the norm, longer than this and air friction losses through the hose reduce efficiency. From a central position it will be possible theoretically, to reach an 18-mtr diameter circle. It is not therefore necessary to install an inlet in every room. From a central hall or landing position it is usually possible to reach into two or three rooms from just one inlet point. Compromise is sometimes required between the ideal inlet position and the feasibility of connecting to the ducting. Although normally wall mounted at a convenient height, slim-line, metal, floor-mounted valves are available and can be used where wall mounting is problematic.



- Hose and attachments.** As mentioned above the standard cleaning hose is 10 mtrs. long, and weighs 1.5 kilos. Hoses are 35mm diameter, crush-proof spiral bound plastic. One end is finished with a 35mm cuff, which incorporates a metal ring. This end is inserted into the inlet valve and the metal ring completes the low volt circuit automatically switching the power unit on.

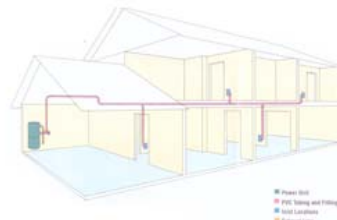
The other end of the hose is finished with a curved, chrome steel and plastic handle. The user fits a plastic or metal wand to this end of the hose. Various cleaning tools can then be fitted to the wands; telescopic metal wands are available to allow adjustment to avoid bending on the part of the user. Plastic wands are of course lighter.

On/off hoses are available. With these the low voltage current is carried up inside the hose to a switch at the curved end of the hose. This eliminates the need to unplug the

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hose when pausing to answer the phone etc.

A rack is provided on which to store the hose when not in use. This can be fitted inside a convenient cupboard.

A recent development is the Vacpan unit. This is a flush-mounted, floor level inlet that can be fitted in areas of hard floor finishes. It allows users to sweep the floor clean but eliminates the need for a dustpan. Opening the Vacpan with a foot automatically switches on the power unit and the debris on the floor is sucked away to the dirt collection bucket. The Vacpan is deactivated by closing the valve with ones foot.

Installing your Scotvac System

Before commencing installation work, ensure you have available all the necessary tools. The following list is a guide for you.

N.B. If you will need to bore through a masonry wall, we recommend that you hire a 21/2" masonry core bit and drill. This will give you a quick and clean hole through your wall.

N.B. An electronic stud finder may be useful to locate the presence of wall studs, floor joists and hidden wires and pipes.

N.B. Always apply cement to pipe and not into socket of fitting. Always ensure pipe is cut square and fully inserted into fitting, remove all burrs before final gluing of pipes.

N.B. Always fix low volt (L.V.) wiring to ducting as you proceed. Clip or tape to ducting every metre or so. It is generally preferable to "loop in" the wiring and make connections and junctions at back of valves. Junctions in L.V. wiring can take place where side branches meet the main ducting run by splicing wires together. If this option is selected, ensure that the wires are well secured to the ducting, so subsequent work does not dislodge the connection.

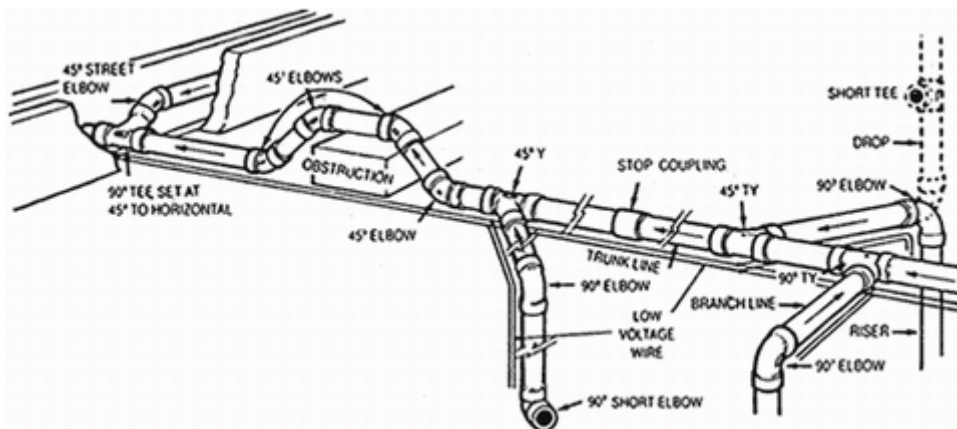
Remember

Use a pipe cutter or fine tooth hacksaw to cut pipe. Make all cuts square and remove all burrs.

Ensure pipe is pushed fully into fittings so no dirt trap develops.

Apply adhesive cement to side of pipe, not to inside of fitting. Insert pipe into fitting, with twisting action to ensure good all-round, adhesive contact.

Always ensure side branches enter the main branch from above or the side, not from below. Do not leave loops into which debris can fall and collect as blockages will then occur.

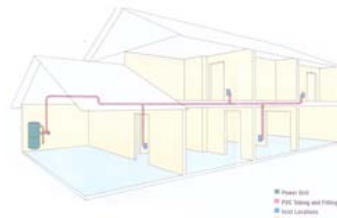


Step 1: Installing Inlet Valves

a) Wall Valves in Existing Structure

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Determine as closely as possible desired location of inlet valve. Drill a small pilot hole in the floor directly below the proposed valve location. A straight length of coat hanger wire, cut at an angle, makes a good pilot hole drill bit, but, be careful not to snag carpeting. Leave straightened length of coat hanger wire through this pilot hole to serve as locator and guide point (Fig.3).

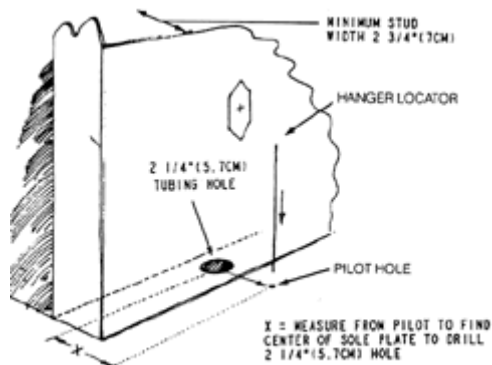


FIG. 3 – WALL INLET HOLES – EXISTING STRUCTURES

From beneath floor, measure over from pilot hole to locate the centre of the sole plate. NOTE: You may want to drill a $\frac{3}{4}$ " (1.9cm) inspection hole to avoid drilling into the bottom of a stud or other "inner-wall" obstruction. Drill a $2\frac{1}{4}$ " (5.7cm) diameter hole through the centre of the sole plate. Using a flashlight or probe, inspect the interior of the wall to be sure there are no obstructions.

NOTE: The opening you are going to cut in the wall for the inlet valve should be located between studs, clear of obstructions such as plumbing, wiring, heat ducts, etc. Minimum stud width for sufficient clearance for inner-wall mounting-bracket assembly is $2\frac{3}{4}$ " (7cm). (See Fig.3 above).

b) Using METAL Stud-Mounting Bracket

Centred at the desired height above floor level, cut an almost square opening $2\frac{3}{4}$ " (7cm) wide by $2\frac{1}{2}$ " (6.35cm) high in the wall directly above the $2\frac{1}{4}$ " (5.7cm) sole plate hole. Cut or file two $\frac{3}{4}$ " (1.9cm) high triangular pieces above and below the almost square opening so that your wall opening exactly resembles (Fig.4).

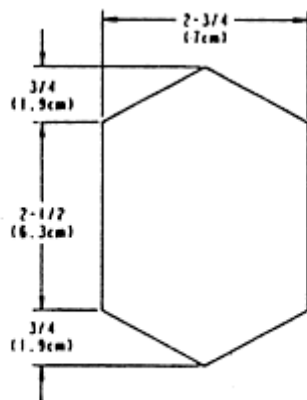
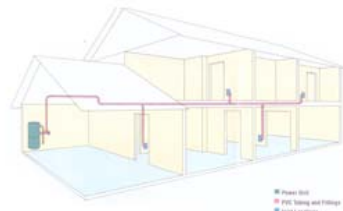
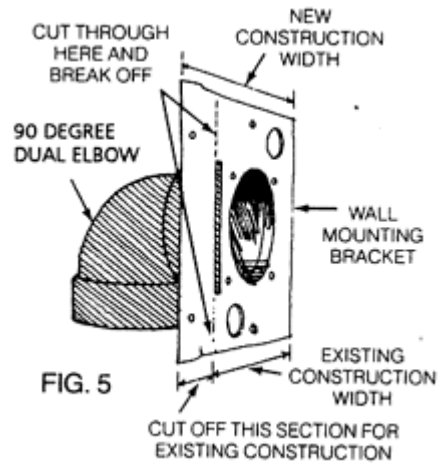


FIG. 4 - WALL OPENING

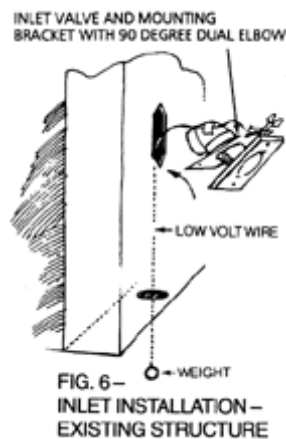


Now cut or break off "New Construction" section from metal wall mounting bracket and glue a 90 degree dual elbow to the pre-rieveted adapter ring (Fig.5).

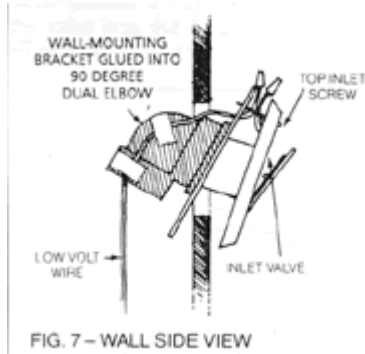
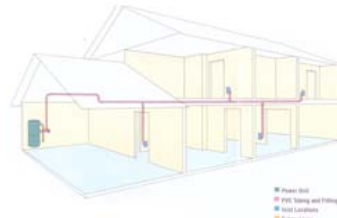


Insert top screw only through inlet valve and gently squeeze inlet valve stem into bracket assembly until you are able to just start top screw threads in bracket assembly hole.

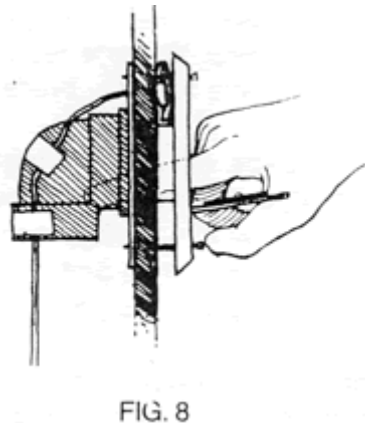
Strip the low-volt wire and tape it to the 90 degree dual elbow with approximately 6" (15.3cm) sticking through wire guide hole. Join two inlet valve wires with wire connectors supplied. Attach a small weight to the other end of the low-volt wire and drop the weighted wire through the opening in wall. Allow wire and weight to hang through sole plate (Fig.6).



Insert assembled 90 degree dual elbow and wall-bracket assembly through wall cut-out hole as illustrated (Fig.7).



Once metal mounting bracket is completely inside wall cavity, slide the entire assembly upwards so metal plate is flush with inner wall surface and inlet valve is flush with outer wall surface. You can insert index finger through inlet valve opening and gently squeeze inlet valve stem further into inner wall assembly (Fig.8)



NOTE: Mount inlet valve so lid pulls down to open.

Now, insert and partially tighten bottom inlet valve screw. Tuck low-voltage wires and connectors under sides of wall inlet valve. Adjust inlet valve for perfect vertical alignment and tighten both inlet valve mounting screws. Be sure the inlet valve lid operates freely. Apply glue to an adequate length of tubing and aim it upwards through the hole and into the 90 degree dual elbow fitting on the back of the mounting plate. Join this branch line to the trunk line using a 90 degree sweep tee.

If the inlet valve is to be serviced from the attic, shorter pieces of tubing joined by couplings may be required due to overhead space restrictions. Pre-cut these pieces and work quickly to prevent the cement on the end of the tubing from drying before it reaches the fitting at the valve below.

c) Using PLASTIC Stud-Mounting Bracket

Having determined the location is suitable, cut a 2½" (6.35cm) x 4" (11cm) hole in the wall at the desired inlet valve location (See Fig.9).

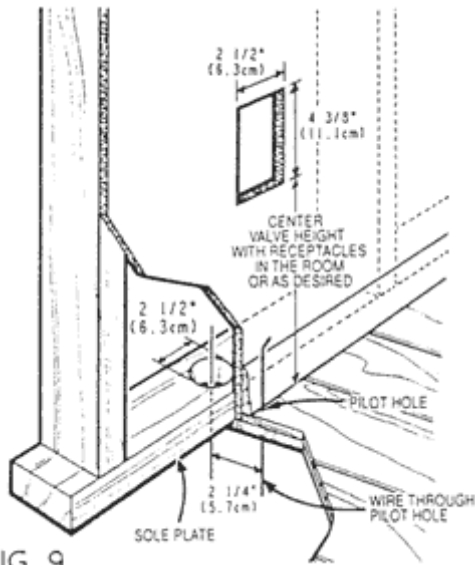
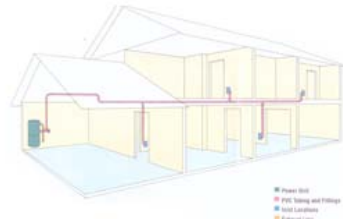


FIG. 9

Now cut or break off "new construction" section from plastic wall mounting bracket. Tape low-voltage wire to the end of a sufficiently long piece of tubing and pass it up from beneath. If the trunk line is in the attic, tie a weight to the end of the low-voltage wire and lower it through the opening. Remove the wire and pass it through the upper hole in the timed mounting plate. Bare an inch of both wire leads and wrap them around the lugs on the back of the valve in a clockwise direction. Tighten the lugs with a Phillips screwdriver.

Apply cement to the flange on the back of the mounting plate and attach a 90 degree dual elbow fitting oriented in the appropriate direction. Tilt the mounting plate forward and angle it into the hole in the wall. Centre the mounting plate in the hole and pull outward (See Fig.10).

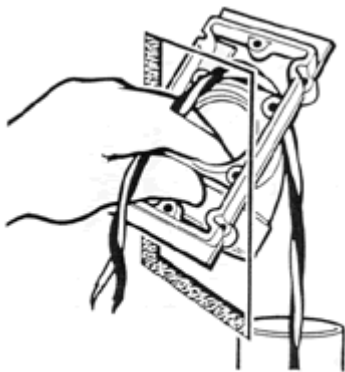


FIG. 10

Hold the mounting plate in place with a bent coat hanger. Open the valve lid and slide the valve flange first over the end of the coat hanger. Keep tension on the coat hanger while inserting the valve into the mounting plate with a twisting motion (See Fig.11).

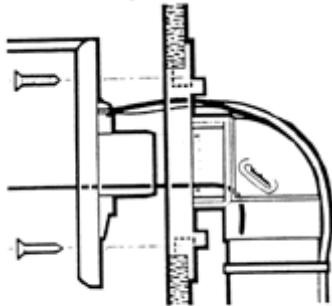
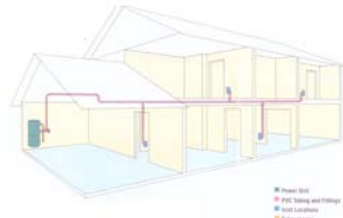


FIG. 11
Note: Use short screw to avoid piercing dual 90 degree elbow.

Do not use glue; the built-in mounting plate gasket will provide a positive seal. Align the screw holes in the valve with those in the mounting plate. Using the screws provided, secure the valve in place. Use the extra short screw if the longer screw is going to interfere with the tubing behind. Do not over tighten.

Apply glue to an adequate length of tubing and aim it upwards through the hole and into the 90 degree dual elbow fitting on the back of the mounting plate. Join this branch line to the trunk line using a 90 degree sweep tee.

If the inlet valve is to be serviced from the attic, shorter pieces of tubing joined by couplings may be required due to overhead space restrictions. Pre-cut these pieces and work quickly to prevent the cement on the end of the tubing from drying before it reaches the fitting at the valve below.

d) Floor Valves

To install a floor inlet, drill a pilot hole with a coat hanger and check the location as previously described. When you are sure that the proposed location will not be blocked by a joist or other obstruction, cut a hole in the carpet slightly larger than your 2¼" (5.7cm) drill bit. Drill a 2¼" (5.7cm) hole in the floor. Chisel or saw this hole larger to accommodate the inlet valve low-volt connections (Fig.12).

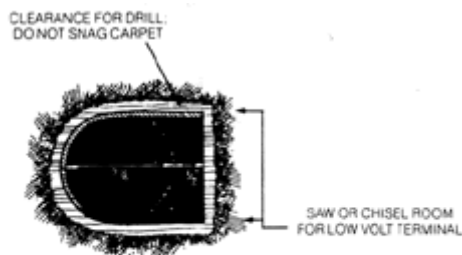


FIG. 12 - FLOOR INLET HOLE
IN AN EXISTING STRUCTURE

Assemble an adapter reducer bushing and some low-volt wire to an inlet valve. Screw the valve to the floor. Repeat until all inlets are installed (Fig.13).

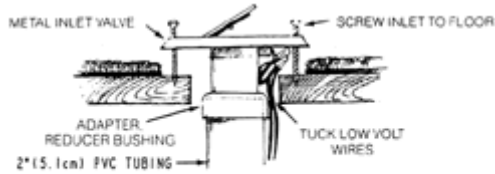
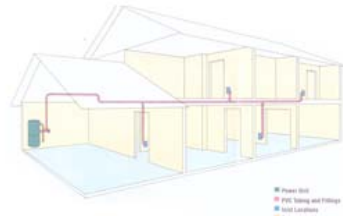


FIG. 13 - FLOOR INLET INSTALLATION

e) Closet Wall Installation-Existing Structure

Often it is only practical to install your system with the line coming up through the floor inside a closet and then through both sides of the wall. To use this method, select suitable inlet valve location, exercising same precautions as for normal wall installation. Using a length of coat hanger, pierce a hole through both walls (Fig.14).

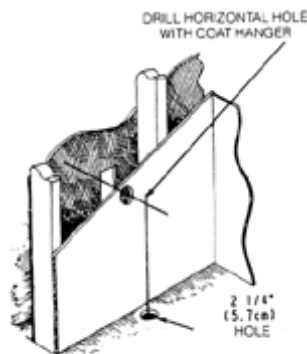


FIG. 14 - CLOSET WALL INSTALLATION IN AN EXISTING STRUCTURE

Be sure to hold wire perfectly horizontal so that both interior and exterior holes line up with one another. Check for inner wall obstructions by bending short length of coat hanger wire at a right angle and twirling this right angle piece inside the wall.

Drill a 2 1/4" (5.7cm) hole horizontally through both sides of wall.

Make the hole in the exterior wall surface into the same shape opening as described previously in STEP 1 - (Installing Inlet Valves) (Fig.4).

From inside closet, cut 2 1/4" (5.7cm) hole through floor, either directly below opening in wall or at convenient spot. (Caution: - Make pilot hole as in STEP 1 previously). Run low-voltage wire through 2 1/4" (5.7cm) hole in floor, and through wall to exterior of closet.

Pass low-voltage wire through the wire guide hole of the inner wall closet assembly (Fig.15) and tape low-voltage wire to this assembly immediately behind the metal bracket.

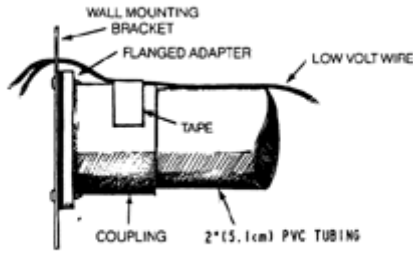
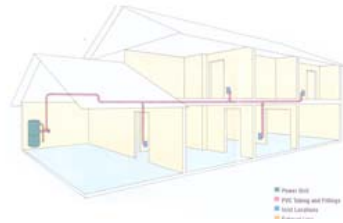


FIG. 15 - INNER-WALL CLOSET ASSEMBLY

Attach wires to low-voltage terminals at rear of inlet valve.

Place inner wall assembly lengthways through wall opening and arrange assembly so that metal bracket is flush with inside surface of wall. Screw inlet to wall as described previously in STEP 1, then complete as per (Fig.16).

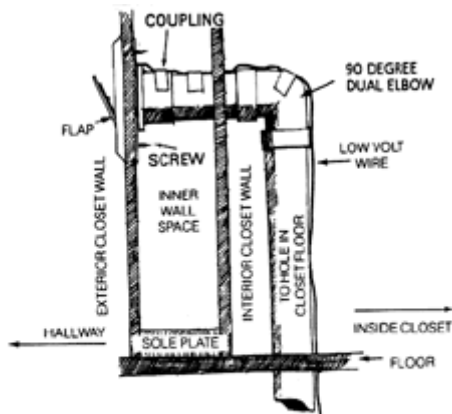


FIG. 16 - INNER-WALL CLOSET ASSEMBLY - INSTALLED

f) Wall Valve Installation-New Construction

Select a probable location for inlet valve and drill a pilot hole in the floor. Go below to check that tubing path is clear of present, or future, obstructions such as floor joists, heating ducts, plumbing, wires, etc.

At intended inlet valve location, drill a 2¼" (5.7cm) diameter hole through sole plate. To pinpoint centre of hole, measure over 2" (5.1cm) from side of stud and 2" (5.1cm) from front of sole plate (Fig.17).

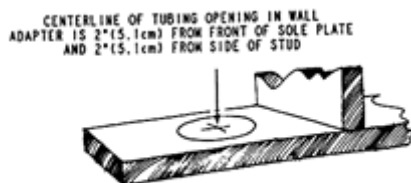
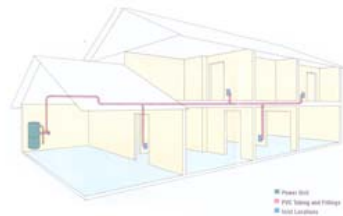


FIG. 17



Glue a length of tubing into a stud-mounting bracket assembly. Cut a length of low-voltage wiring, bring approximately 6" (15.24cm) through top wire guide hole in stud bracket assembly and double it back into elbow hole. Tape wire to tubing at assembly elbow and again close to end, and tuck remaining wire into bottom of tubing. Screw plaster guard onto face of assembly (See Fig.18).

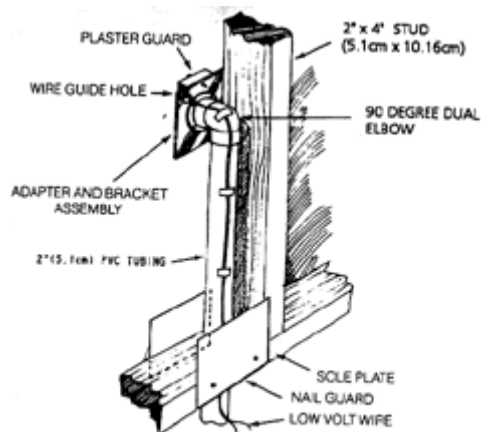


FIG 18 - STUD-MOUNTING BRACKET ASSEMBLY (NEW CONSTRUCTION)

Drop bottom of tubing through 2¼" (5.7cm) hole and nail stud mounting bracket assembly to stud. Make sure centre of inlet hole is at the correct height above floor level and tubing extends below sub-flooring

Be sure to install a nail guard when holes are drilled through the sole or top plates. This is to prevent a nail or screw from penetrating the vacuum tubing. Go to STEP 2 - Installation of Tube System and complete tubing system as much as possible.

After the walls are finished and painted, the plaster guards will be removed and inlet valves installed. The tubing system may be completed at that time and the power unit installed.

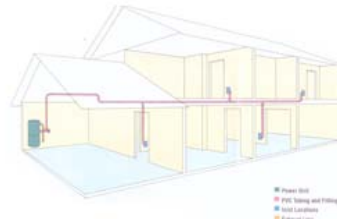
STEP 2: Installation of Tube System (New or Existing Structure)

Starting at the inlet furthest from the power unit, temporarily fasten the main line in position. (Good idea: - From a nail or overhead pipe, etc., make two loops of string or low-voltage wire to pass PVC tubing through, to hold it in position while you work).

Push a length of PVC tubing up into bottom of inlet valve assembly. Bear in mind, tube enters all fittings approximately ¾" (1.9cm). Measure, cut and slip-fit this vertical line to main horizontal line with a 90 degree sweep elbow.

To avoid potential clogging problems when installing tubing and fittings, here are some recommendations :

- Always make straight cuts on tubing.
- Always remove burrs from end of tubing.
- Be sure tubing fits against shoulder of fitting with no gaps.
- Glue tubing side only before assembly into fittings.



Connect additional inlet valves to main trunk line with the 90 degree sweep tee (Fig.19).

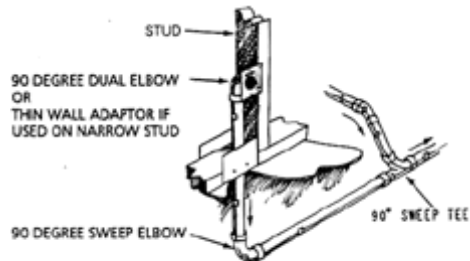


FIG. 19 - TYPICAL UNDER-FLOOR INSTALLATION

Be sure to install sweep tee fittings so sweep is towards power unit (Fig.20).

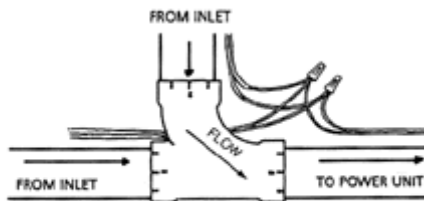


FIG. 20 - 90 DEGREE SWEEP TEE

Always run branch lines, from sides or top of main trunk line, never out of the bottom, as this will create a trap for dirt to fall into.

Bring low-voltage wire along as you assemble tubing. Join or splice wire with wire connectors at each branch or junction in the tubing. Neatly tape wire to tube. Proceed until the tubing system is complete.

How to Install a Built-in Vacuum System In Block Walls

Installation into New Brick/Block Construction

Drill a pilot hole followed by a 2" (50mm) hole with a core bit - drill halfway from both sides to avoid damage to the block. Next ream out the hole to take an adapter and coupling so that the plate fits flush against the block. Mark and drill the holes for screws and either drill a hole for the wire or make grooves at the bottom of the hole.

Assemble and if OK to fit, screw the plaster guard on, leaving at least 6" of wire knotted and coiled inside the plaster-guard

Always put a sharp 90 degree bend immediately after the valve to stop long objects entering the system. Also fix the wire to the pipe with cable ties and the pipe to the wall with a pipe bracket where necessary.

It is not uncommon for plasterers to cover your plaster-guards completely, or to find your wiring connected to the burglar alarm!



Scotvac
once in a life time integrated vacuum systems

